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Remarks

I.   Amendments to the drawings and the specification

FIG. 5A, the description on page 10, line 1, through page 11, line 2, and the description on page 16, line 23, through page 17, line 14, of the specification have been amended to conform to the description of the decoding process on page 13, line 27, through page 14, line 15, which explains that:

> ... the invertible graphical operation should generate a mapping (f) from the base image sub-matrices (BI_i) and the graphical templates (T_j) to the graphical bar code regions (GBC_i) that may be inverted (f') to recover graphical templates (T_j) from the base image sub-matrices (BI_i) and the graphical bar code regions (GBC_i). That is,

$$f(BI_i, T_j) \rightarrow GBC_i \qquad\qquad (1)$$
$$f'(BI_i, GBC_i) \rightarrow T_j \qquad\qquad (2)$$

That is, during the decoding process the inverted graphical operation is applied to the base image sub-matrices and the graphical bar code to recover the templates that are encoded in the graphical bar code.

II.   Claim status

Claims 1-23 and 25-30 were pending.

Claims 13-15 have been canceled without prejudice.

The Examiner has indicated that claims 15 and 16 would be allowable if rewritten in independent form. The elements of claim 15 have been incorporated into independent claims 1 and 22. Thus, claims 1 and 22 now should be allowed. Claims 2-12 and 16-21, which depend from claim 1, also should be allowed.

Claims 27 and 28 have been allowed.

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III.   Claim rejections under 35 U.S.C § 103

The Examiner has rejected claims 23, 25, 26, 29, and 30 under 35 U.S.C. § 103(a) over Yu (U.S. 6,700,992) in view of Cass (U.S. 6,141,441). Claims 23 and 29 are independent claims. Claims 25 and 26 depend from claim 23 and claim 30 depends from claim 29.

Each of claims 23 and 29 recites that a base image is generated. The base image has halftoned regions of an original image incorporating diffused errors that are computed based at least in part upon modulations in the graphical bar code. The graphical bar code is graphically demodulated based on the base image to recover graphical code words embedded in the graphical bar code. The recovered graphical code words are probabilistically compared to a set of graphical code words to obtain a sequence of graphical code words corresponding to a graphical encoding of a message. The sequence of graphical code words is decoded to produce a decoded message.

Neither Yu nor Cass teaches or suggests the combination of features recited in each of the claims 23 and 29. Indeed, neither Yu nor Cass graphically demodulates a graphical bar code based on a base image having halftoned regions of an original image incorporating diffused errors that are computed based at least in part upon modulations in the graphical bar code. Instead, Yu extracts a message from the halftoned digital image by cross-correlating a digitized version of the halftoned digital image with a replica of the original carrier image (see col. 4, lines 47-63). Cass, on the other hand, derives a set of signal cells from an encoded image simply by removing the average color from the encoded image.

For at least these reasons, the Examiner's rejection of claims 23, 25, 26, 29, and 30 under 35 U.S.C. § 103(a) over Yu and Cass now should be withdrawn.

IV.   Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

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Respectfully submitted,

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